



UNIVERSITY OF MAINE AT FARMINGTON  
COLLEGE OF EDUCATION, HEALTH AND REHABILITATION

**LESSON PLAN FORMAT**

**Teacher's Name:** Ms. Donovan **Lesson #:** 2 **Facet:** Application

**Grade Level:** 8 **Numbers of Days:** 3-4 days

**Topic:** Inventions contribute to diversity and culture

**PART I:**

**Objectives**

**Student will understand that** inventions of the classical civilizations contribute to the diversity of each culture. (**Where**)

**Student will know** Genghis Khan, Ming, Dynasty, Ashoka, Buddhist monks, The Han Dynasties, The Roman Empire, Julius Cesar, Octavian, Aryans, Sanskrit

**Student will be able to do** Students will be able to design a model of an invention or object that was frequently used in a classical civilization.

**Product:**

Google Sketch up

**Maine Learning Results (MLR) or Common Core State Standards (CCSS) or Next Generation Science Standards (NGSS) Alignment**

*Students will understand historical aspects of unity and diversity in Maine, the United States, and various world cultures, including Maine Native Americans.*

**Rationale:**

In this lesson the teacher is addressing how inventions and every day gadgets are important to every culture that uses them for survival or to make life easier. The teacher and students will also work together to gain insight on how inventions improve over time.

**Assessments**

**Formative (Assessment for Learning)**

**Section I – checking for understanding strategy during instruction**

The teacher will use exit card to ask the student what they have learned in class that day. This will also help the teacher gauge in a short period of time what the student got in class and what needs to be gone over again. An example of the exit ticket would be a question like name a gadget or invention from Classical China and describe how this tool would be used. The other checking for understanding would be student conference this is helpful for both the teacher and the student because each student gets one on one time with the teacher to address any need or problems that are occurring in class. Each student will have time to meet with the teacher during class time to address any issues they may have with their comprehension of the content.

**Section II – timely feedback for products (self, peer, teacher)**

Students will give feedback throughout the graphic organizer activity as well as report to the class on another peers invention project that will be made using Google Docs. Students will interview a peer on how they made their invention, what it is, and how long it took a typical person in the time period to

make. The teacher will give feedback through a checklist of how well the project was thought out and how much time was spent on the project as well as give feedback on the student's comprehension of their chosen invention. The teacher will also look for enthusiasm of the student as they are presenting the topic in their own.

### **Summative (Assessment of Learning):**

Students will create a **Google Sketch Up** that looks like a model of an invention, gadget or life changing development that a Classical Civilization used. They will also find a way to add modern touches to the gadget and explain how we would use the gadget today. This will challenge the student's critical thinking and problem solving skills.

### **Integration**

#### **Technology (SAMR):**

Google Sketch up is at the Augmentation level because students will be able to design their own object and can easily modify the parts of their invention through the many tools that google sketch up has. Students can also share their invention ideas with the teacher and their peers when they are done designing. They can also easily show the function of their tool by walking around it and showing different views without having to design it again from a different angle as a student would if they were hand drawing their project.

**Math:** Students are using their math and problem solving skills while using Google Sketch up. Students will create the dimensions of their invention that they have chosen. Students will also have to make to scale improvements or modern upgrades to the inventions to make it their own and show that it can be used in today's society.

### **Groupings**

#### **Section I - Graphic Organizer & Cooperative Learning used during instruction**

Students will use a step by step chart to document what it will take to make their invention on Google sketch up they will also write the step by step way to use the invention or object the way that they did in Ancient China, India or the Mediterranean Basin. As a cooperative learning activity peers will interview each other on how the object works then report back to the class.

#### **Section II – Groups and Roles for Product**

Google Sketch up- Students will create a life changing invention that was made during the time period of Ancient China, India, and the Mediterranean Basin. Students will each work on their own project in which their role is to create ways to make an ancient artifact or invention modern. Students will also learn, write about and explain to the class what the invention was used for in the time period and then explain what makes it useful for people to use today. Students must also apply their knowledge of the invention and connect it to how it was important to a certain culture.

### **Differentiated Instruction**

#### **MI Strategies**

**Logical:** Students will solve the problem of how the invention of the classical civilization will work today and design the new model on Google Sketch up.

**Verbal:** Students will write out the steps to creating their invention for the modern world and will write out the steps of what it takes to make the model.

**Visual:** Students will create a digital model of an invention to show to the class in Google sketch up.

**Intrapersonal:** Students will plan out their invention on their graphic organizer as a reflection of the lesson that was taught about artifacts of the Classical Civilizations.

**Interpersonal:** Students will interview their peers and report back to the class on what their partner's invention does.

**Naturalist:** Students will have to think about the environments that the object they are designing is suitable for.

### **Modifications/Accommodations**

*From IEP's ( Individual Education Plan), 504's, ELLIDEP (English Language Learning Instructional Delivery Education Plan) I will review student's IEP, 504 or ELLIDEP and make appropriate modifications and accommodations.*

### **Plan for accommodating absent students:**

If students are absent on any day during this lesson students will need to get their graphic organizer from the absent box in the room. If students miss the notes in class that day they must ask their peers to copy their notes or they must independently go over the readings and take their own notes. Students must come see the teacher to ask about any other additions they must make to their notes and make the appropriate changes after their missing notes are finished. If students miss the day that we start working on the google sketch ups then they must ask the teacher for help downloading the program and getting started. Students will be expected to work on their google sketch up every day for a period of time for their homework and parts of class. They must also be able to show and tell the teacher what progress they have made from the previous day of work on the project if absent.

### **Extensions**

#### **Technology (SAMR):Gifted Students**

Google Sketch up: Students will create their project as if they are trying to patent this invention to a company that will sell their modifications to the invention to the general public. Students will do this by making their inventions attractive and accurate. They will also post their invention on the class website for parents to see.

### **Materials, Resources and Technology**

*List all the items you need for the lesson.*

Step by Step Graphic organizer

Reading hand outs

laptops

Check list for the google sketch up

### **Source for Lesson Plan and Research**

**Sequence chart:** <https://www.edrawsoft.com/sequencechart.php>

**Three step**

**Interview:** [http://edu221resources.wikispaces.com/file/view/cooperative\\_learning\\_strategies.pdf/426402320/cooperative\\_learning\\_strategies.pdf](http://edu221resources.wikispaces.com/file/view/cooperative_learning_strategies.pdf/426402320/cooperative_learning_strategies.pdf)

**Student Conference:**

[http://www.levy.k12.fl.us/instruction/Instructional\\_Tools/60FormativeAssessment.pdf](http://www.levy.k12.fl.us/instruction/Instructional_Tools/60FormativeAssessment.pdf)

**Exit Ticket:** <http://edu221spring11class.wikispaces.com/file/view/strategies.pdf/200849872/strategies.pdf>

**Sanskrit:** <http://www.utexas.edu/cola/centers/lrc/eic/vedol-0-X.html>

**Octavian:** <http://www.roman-empire.net/emperors/augustus.html>

**Ashoka:** <http://www.britannica.com/biography/Ashoka>

**The Roman Empire:** <http://www.history.com/news/history-lists/10-innovations-that-built-ancient-rome>  
**Ancient Chinese Inventions:** <http://blog.world-mysteries.com/science/ancient-chinese-inventions-and-discoveries-that-shaped-the-world/>

## **PART II:**

**Teaching and Learning Sequence** (Describe the teaching and learning process using all of the information from part I of the lesson plan) *Take all the components and synthesize into a script of what you are doing as the teacher and what the learners are doing throughout the lesson. Need to use all the WHERETO's. (1-2 pages)*

### **Classroom Arrangement**

The class room will be set up in a square circle that way all students can be focused on the board when it is time for class. This will also be helpful for students to get together in pairs when it is time for the interview portion of the lesson. There will be a gap so the teacher can walk behind students in the middle to keep an eye on what they are working on. Students can also have group discussions within the square circle very easily without moving around chairs and desks too much.

### **Agenda (include days and times)**

**Day 1: Invention Guessing Game-** Students can work together to figure out what the invention is however they are not allowed to use computers or books with this activity. (15 minutes)

**Download google Sketch up and tutorial-** Have students download google sketch up and give them a short tutorial on how to use it. Explain what the project will entail but explain to them that they will not need it today. (5 minutes)

**Lecture and Notes on Ashoka and Sanskrit-** The teacher will lecture about the changes Ashoka has made and how Sanskrit was an important development while students take note about the key points of the lecture. The teacher will have a guideline to the notes on the board. (30 minutes)

**Sequence Chart-** Have students complete research and their sequence chart as a rough draft for their invention have them include facts about what it is for, how long it typically took to make along with other facts about the invention. (20 minutes)

**Time to explore-** Now that students are finished or close to finished their rough draft allow them to explore Google Sketch up. (5 minutes)

**Exit Ticket-** Have students write the answer to a question about Ashoka or Sanskrit on a note card to see if they comprehend the material. (5 minutes)

**Assignment-** Be researching more about your invention to add to the information that you already have

**Day 2: Short Review on Ashoka and Sanskrit-** Go over anything that was wrong on the Exit tickets. Ask students if they have any questions about what is being reviewed. (15 minutes)

**Lecture and Notes on Octavian and inventions that came to the Roman Empire-** The teacher will lecture while the student takes notes on Octavian and the changes that he made to his empire. Students will also find out about more cool inventions that were made during the Roman Empire. (35 minutes)

**Work time on Inventions project:** Work on your rough draft some more or begin creating your invention on Google Sketch up (25 minutes)

**Exit Ticket:** Students will answer an exit ticket about Octavian and Roman inventions. (5 minutes)

**Assignment:** Be finishing up your google Sketch ups

**Day 3: Short Review on Octavian and Roman Inventions-** Go over anything that was wrong on the Exit tickets. Ask students if they have any questions about what is being reviewed. (15 minutes)

**Lecture and Notes on Chinese inventions-** The teacher will lecture while students take notes on Chinese inventions. (30 minutes)

**Three step interview-** Students will Partner up with a peer and ask questions about their inventions then they will switch so each person can be the interviewer and the interviewee. Be sure to take notes on your

partner's answers to your questions. (25 minutes)

**Student conference with teacher-** Any students who feel that they have questions or need to see me for help please do so. (Last 10 minutes)

**Assignment-** Please type your interview and have your google sketch up printed out and ready to turn in for the next class we have together.

**Day 4: Presentation day-** Students will present their interviews and report to the class what their partner is doing for an invention for their google sketch up. Students should have at least a five minute presentation each. (80 minutes)

**Teaching and Learning Sequence** (Include all hyperlinks of the above URL's in this section.)

Students will understand that inventions of the classical civilizations contribute to the diversity of each culture. This will show students that even the simplest tools we use in every day life make a huge difference. *Students will understand historical aspects of unity and diversity in Maine, the United States, and various world cultures, including Maine Native Americans.* The teacher will start the lesson with a display of pictures that show inventions of the classical civilizations that the teacher will draw, students will be allowed to work with each other on this activity. This will serve as a guessing game for the students which will require them to tell the teacher what they think the invention was used for and where they think it was created. This will get student's brain juices flowing and the teacher will then explain at the end of the game where some of the inventions came from and what they were used for. This will also serve as a mini pre- assessment to let the teacher know which inventions need to be gone over in more detail. Next students will download their google sketch up program to get ready to create their own ancient invention. The teacher will then go over the assignment and explain that they get time to work on the project inside and outside of class.

**Where, Why , What, Hook Tailors: Interpersonal, Intrapersonal, Logical, Visual, Verbal**

Students will know how [Ashoka](#) contributed to his culture by creating many Changes for the Indian culture. Student will also know how other leaders contributed to the changes of their cultures such as [Octavian](#) .Students will also learn some of the [Chinese inventions](#) that were made. Students will know that anything can be invention including [Sanskrit](#) which is a written language, inventions do not have to be something that you can touch. Lastly students will learn some of the major inventions of the [Roman Empire](#). (See Content Notes). The teacher will use either an [exit ticket](#) or a [student conference](#) to check for understanding so she can address the questions right away the next day or class period. The teacher will then instruct the students to begin planning out their own invention by using a [sequence chart](#) graphic organizer. This will allow the teacher to help any students that are stuck researching their invention for the class. The teacher will be walking around the room for anyone to ask for help. Once the students are finished researching and brainstorming then they will all pair up to do a [three step interview](#) which will allow students to ask their classmates about their inventions and the interviewer will share with the class to help their class mates get more ideas in the brainstorming process.

**Equip, Explore, Rethink, Tailors: Interpersonal, Intrapersonal, Logical, Verbal, naturalist**

Students will be able to design a model of an invention or object that was frequently used in a classical civilization. Students will have class time to explore and download google sketch up during class time so they can come and get help from the teacher if they are having problems with the program. The teacher will also provide a basic tutorial video to students that have missed the introduction of the software. Students will design both a model of the invention from the time period as well as a new modified version that people could use today. This is to experience what it would be like to come up with their own ideas and experience what will work and what will not work in modern day society. There will be teacher and

peer feedback, the peer will give feedback by creating an interview which is a pair activity and once the interview is over the interviewer will suggest changes that could be made to the project. After this process is over the student will then switch roles as the interviewer and interviewee.

**Experience, Revise, Refine, Tailors: *Interpersonal, Intrapersonal, Verbal, Logical***

The teacher will score the product by using a checklist for both the interview and the invention design together. Students will get feedback on how students could have made their interview better or how they could have put more effort and detail into their invention. The teacher will give feedback in other ways throughout the whole lesson as well such as meeting with students during the student conference. The teacher will also set up a review during each class to give feedback on the exit tickets. Each assignment will be given feedback and will be given back to the student within one or two days after the due date or the date that it is passed in.

**Evaluate, Tailors: *Interpersonal, Intrapersonal***

### **Teacher Content Notes**

Students will know.....

Ashoka, The Roman Empire, Octavian, Sanskrit, Chinese Inventions

*Develop detailed content notes so a substitute or a colleague can teach your lesson. (1-2 pages)*

**Ashoka-** Ashoka ruled the Mauryan Dynasty in India between 265 and 238 BCE. He thought it was necessary to be a Buddhist and did away with the caste system during his rule. He believed that all of his people should be equal. While Ashoka was in rule he founded hospitals for the sick, planted trees along the road ways, dug wells, made rest houses and water sheds, and also tried to encourage people to care for animals. Along the way he set up pillars throughout the public to tell people of his laws and made everyone follow them. Whoever did not follow them were responsible for the consequences. Ashoka also sent out missionaries to convert more of his people to Buddhism. He also made laws that people must be vegetarians and not speak ill of one another. To this day some of the pillars still stand and the most famous pillar with four lions perched on the top is the symbol for India today. Some of these developments were huge for India during this time.

**The Roman Empire-** In 312 BCE Aqueducts were developed in Rome these were first made as stone pipes that were gravity fed and led the water to the town square. They did not actually invent the aqueducts but they did perfect them and it was a great development for the Empire. Some of the original aqueducts built are still used today as a water system. Over 2,100 years ago Romans started to use concrete to build their buildings. Bridges, monuments and even aqueducts were made with concrete. Their concrete was developed well enough that it could withstand any chemical decay. Romans also developed Newspapers, bound books, the Julian calendar, Roads and Highways.

**Octavian-** A Roman emperor who is later known as Augustus Cesar. One of his biggest influences on Rome was to make the senate appoint him as the head of the state in Rome. He was so powerful that he gained power over the most powerful politicians in the city state. He erected buildings created games for the public to play and created a new peace and prosperity in Rome. Under his own rule he had restored eighty two temples throughout the city state of Rome. He slowly created his empire and bettered it throughout the years and soon as he got too old he started to withdraw from the public eye. He died while he was traveling outside of Rome.

**Sanskrit-** Sanskrit is an ancient language that is typically found in a lot of Indian writings. One writing that is the most popular that is written in Sanskrit is the Veda. This is the knowledge and poems about how the world came to be through the beliefs of Hinduism. Ancient Sanskrit is the oldest form of known Sanskrit or ancient writings. The earliest Sanskrit was written before the Iliad poems and is written as hymns that will help serve the nature of man. Sanskrit is one of the earliest forms of communication and writing.

**Chinese Inventions-** The abacus was developed around 100 BCE, it is an early counting device. There are two ways to count with it, the upper portion has beads on it and each bead is worth five while each of the lower beads are worth one. The rods on the abacus from left to right show what place value the person is counting in. Canals and Locks were first being developed in the early 600s where water is used to bring boats uphill to get to a certain place in an efficient way. Some other great inventions during this time period include the compass, the cross bow, gun powder and fireworks, and paper printing.

### **Handouts**

Sequence Chart

Invention Guessing Game

Extra readings

## **Maine Common Core Teaching Standards for Initial Teacher Certification and Rationale**

***Standard 1 – Learner Development. The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.***

### **Learning Styles**

**Clipboard:** The teacher will put up a list of things that are to be done in class that day as well as assignments that are to come so the student can work ahead. Deadlines and due dates will be given out to give the clip board learner a sense of what they need to do as well as it doubles as a checklist so they can decipher if they would like to move on and work independently on something else.

**Microscope:** Microscope learners will love exploring their own invention and finding more information on it out side of class. Microscope learners will be given research time to find out more about the time period of their invention as well as how the invention was used and how it has or could improve.

**Puppy:** Puppies will get into pairs and feel as if they are in a safe learning environment when they participate in the interviewing activity. Students will support one another and their ideas and will only give constructive criticism.

**Beach Ball:** Beachballs will enjoy learning because they get a choice of which invention they would like to make and present.

**Rationale:** The lesson is set up so everyone will be comfortable while learning while also having challenging work that may not always meet their needs.

***Standard 6 - Assessment. The teacher understands and uses multiple methods of assessment to engage learners in their on growth, to monitor learner progress, and to guide the teacher's and learner's decision making.***

### **Formative:**

The teacher will use exit card to ask the student what they have learned in class that day. This will also

help the teacher gauge in a short period of time what the student got in class and what needs to be gone over again. An example of the exit ticket would be a question like name a gadget or invention from Classical China and describe how this tool would be used. The other checking for understanding would be student conference this is helpful for both the teacher and the student because each student gets one on one time with the teacher to address any need or problems that are occurring in class. Each student will have time to meet with the teacher during class time to address any issues they may have with their comprehension of the content.

***Summative:***

Students will create a **Google Sketch Up** that looks like a model of an invention, gadget or life changing development that a Classical Civilization used. They will also find a way to add modern touches to the gadget and explain how we would use the gadget today. This will challenge the student's critical thinking and problem solving skills.

***Rationale:*** Students will be able to facilitate their own learning as well as learn from the teacher.

***Standard 7 - Planning Instruction. The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.***

***Content Knowledge:***

Students will know how [Ashoka](#) contributed to his culture by creating many Changes for the Indian culture. Student will also know how other leaders contributed to the changes of their cultures such as [Octavian](#) .Students will also learn some of the [Chinese inventions](#) that were made. Students will know that anything can be invention including [Sanskrit](#) which is a written language, inventions do not have to be something that you can touch. Lastly students will learn some of the major inventions of the [Roman Empire](#).(See Content Notes).

***MLR or CCSS or NGSS: MLR:***

*Students will understand historical aspects of unity and diversity in Maine, the United States, and various world cultures, including Maine Native Americans.*

***Facet: Application***

***Rationale:*** Students will be able to design their own model of an ancient artifact. By doing this they will appreciate even the smallest developments that they use in everyday life that make their life better.

***Standard 8 - Instructional Strategies. The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.***

***MI Strategies:***

**Logical:** Students will solve the problem of how the invention of the classical civilization will work today and design the new model on Google Sketch up.

**Verbal:** Students will write out the steps to creating their invention for the modern world and will write out the steps of what it takes to make the model.

**Visual:** Students will create a digital model of an invention to show to the class in Google sketch up.



**Intrapersonal:** Students will plan out their invention on their graphic organizer as a reflection of the lesson that was taught about artifacts of the Classical Civilizations.

**Interpersonal:** Students will interview their peers and report back to the class on what their partner's invention does.

**Naturalist:** Students will have to think about the environments that the object they are designing is suitable for.

***SAMR:***

Google Sketch up: Students will create their project as if they are trying to patent this invention to a company that will sell their modifications to the invention to the general public. Students will do this by making their inventions attractive and accurate. They will also post their invention on the class website for parents to see.

***Rationale:*** These demonstrate all of the learning types that will be challenged as well as supported.

**NETS STANDARDS FOR TEACHERS**

**1. Facilitates and Inspire Student Learning and Creativity. Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments.**

- a. Promote, support, and model creative and innovative thinking and inventiveness
- b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources
- c. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
- d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments

***Rationale:*** I met these standards because they are able to design and invent their own modern classical civilization invention. They are using collaborative reflection because they are interviewing each other to see how they all came to their conclusions. They are exploring the real world to figure out how the invention would work in today's society. Students are also engaging with their fellow students by presenting their interviews to the class.

**2. Design and Develop Digital Age Learning Experiences and Assessments. Teachers design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop knowledge, skills, and attitudes identified in the NETS-S.**

- a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
- b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress

c. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources

Rationale: Students will be able to adapt their learning experiences to other classes because it will get them to think about the everyday objects that they use and rethink if it would change their life if they were taken away. They are learning about a new technology while creating their summative assessments. They are customizing the way they learn by taking notes on their own or with the class.